

- **New feature: Missing Data Codes (i.e., “Data Missingness” functionality)**
 - Fields that have a blank/missing value may be marked with a custom 'Missing Data Code' to note why the value is blank. The codes can be set up at the project-level in Additional Customizations on the Project Setup page, can have letters, numbers, dots, dashes, and underscores (e.g., '-999, Not asked' or 'UNK, Unknown'). After missing data codes have been set up in a project, you will see an 'M' icon next to each field when viewing a data entry form. Click the icon to open your list of missing data codes, and select one. Once selected, it will save the missing code as the value for the field. Missing data codes can be used for any field type (e.g., date, slider, file upload fields).
 - A field hidden by branching logic will maintain its missing data code if present
 - New isblankormissingcode() function for branching logic, logic, and calculations
 - Missing data codes can be imported via API and the Data Import tool
 - A project’s missing data codes are displayed at the top of the Codebook page
 - A new option exists under for reports called “Display any Missing Data Codes in place of blank values”. This will be carried over to any exports
 - Codes are compatible with SAS exports, which have had their options updated
 - Data Quality rules have been altered / added to help manage missing data
- **New feature: Rich text editor for field labels, headers, and survey invitations**
 - For any field on an instrument in the Online Designer, users may optionally utilize the rich text editor for styling field labels or section headers with many text-formatting options. The rich text editor allows users to change the color of text (including background color), create tables, add text of varying sizes, bullet lists, and more. For any field labels that were originally created without the rich text editor, users may optionally enable the rich text editor for any field by clicking the 'Use the Rich Text Editor' checkbox. It may also be disabled afterward at any time just the same. Rich text is enabled by default for any new fields being created via the Online Designer.
 - Note: The PDF export of surveys/instruments will *not* reflect all the styling of the rich text editor, so keep in mind that line breaks and paragraphs should be represented well in PDFs, but other text-formatting options, such as large text, bullet points, and colors are not able to be translated into the PDF export of the instrument.
- **New feature: Alerts & Notifications**
 - The Alerts & Notifications feature allows you to construct alerts and send customized email notifications. These notifications may be sent to one or more recipients and can be triggered or scheduled when a form/survey is saved and/or based on conditional logic whenever data is saved or imported. When adding/editing an alert, you will need to 1) set how the alert gets triggered, 2) define when the notification should be sent (including how many times), and 3) specify the recipient, sender, message text, and other settings for the notification. For the message, you may utilize customized options such as rich text, the piping of field variables (including Smart Variables), and uploading multiple file attachments. While similar in many respects to Automated Survey Invitations, Alerts & Notifications allow for greater complexity and have more capabilities. For example, alerts apply to both data entry forms and surveys, and they also allow for more options regarding who can be the recipient of a notification (project users, survey participants, etc.).
- **Improvements related to viewing or creating reports**
 - **Clean Checkboxes** – New report option that will combine checkbox options into a single column of only the checked-off options. Previously, any checkbox fields

in a report would have their choices represented as separate columns in the report, but with this new setting, they can now all be represented as a single column with comma-delimited values and comma-delimited labels.

- **Report Descriptions** – Users may now optionally set a description for a report, in which the description gets displayed as text below the report title on the report page. This allows users to provide instructions or explanatory text for the report.
- **Report Search** – A new search feature exists on the left-hand menu to allow users to search within the title of that project's reports to help them navigate to a report very quickly
- **ID Filter** – A project's Record ID field can now be used as a Live Filter in any given report, thus allowing users to easily view the report for a single record.
- **Edit Access** – In addition to setting "View Access" when creating or editing a report, users can now set the report's "Edit Access" to control who in the project can edit, copy, or delete the report. This setting will be very useful if one wishes to prevent certain users from modifying or deleting particular reports.
- **Report Folders** - Reports can now be organized into folders in any given project. If a user has "Add/Edit Reports" privileges, they will see an "Organize" link on the left-hand project menu above the project's reports. They will be able to create folders and then assign their reports to a folder, after which the project's reports will be displayed in collapsible groups on the left-hand menu.
- **New feature: Many project components added to the Project XML file** – When downloading the Project XML of metadata or metadata+data on the Project Setup->Other Functionality page, it now provides checkboxes to allow users to incorporate the project components listed below in the XML file. This means that all these things will be easily transferable now when exporting/importing the Project XML to create a new project on the same REDCap server or on a different REDCap server.
 - Data Access Groups (including DAG assignments for records if data is included in the XML file)
 - Data Quality Rules
 - User Roles
 - Surveys and survey settings (including a survey logo, if used)
 - Automated Survey Invitations
 - Survey Queue
 - Reports
 - Report Folders
 - Record Status Dashboards
- **New features relating to Data Privacy (e.g., GDPR)** – The new settings listed below are available on the "Edit a Project's Settings" page for a given project. Thus these must be enabled by a REDCap administrator on a per-project basis
 - **Delete a record's logging activity when deleting the record** - If enabled, this will delete all the data values and actions logged for the given record being deleted as seen on the Project Logging page. Note: For multi-arm longitudinal projects, this feature will delete the record's logging for the given record only in the current arm. This feature can be used to aid in compliance with GDPR or similar regulations that require 'right to erasure'.
 - **Auto-delete all Data Export Files in the File Repository that were created more than X days ago** – To enable this setting, an administrator may set a value from 1 to 999 to set the number of days after which all Data Export files will get automatically deleted from the project's File Repository. This feature can be used to aid in compliance with GDPR or similar regulations that require 'right to

erasure'. NOTE: This will only delete files under the Data Export Files tab. No other types of files in the File Repository will be deleted.

- **Custom footer text for survey pages** - Custom text may be provided (including HTML-formatted text) that will be displayed either via a modal dialog or inline at the bottom of all survey pages in the project. This could potentially be used for display a data privacy statement or other similar things that should be displayed on the same page where data is collected.
- **New feature: REDCaptcha**
 - This feature allows users to utilize the Google reCAPTCHA functionality to help protect public surveys from abuse from “bots”, which are automated software programs that might enter trash data into surveys. Users will then be able to choose to enable the Google reCAPTCHA functionality on the Public Survey page in their project, after which the public survey will display the reCAPTCHA checkbox and “I’m not a robot” text on a survey page prior to allowing the participant to view the public survey. This feature is not employed on any private survey links because those are unique to a record and thus would never be made publicly available like a public survey link would.
 - Note: A survey participant will never have to pass the reCAPTCHA test more than once per day on a given device/computer.
- **New feature: PROMIS Batteries** – 15 batteries of instruments are now available in the REDCap Shared Library. A battery is a set of instruments that can be downloaded from the Shared Library as a bundle, in which they are meant to all be taken together one after another within a single battery. When downloading from the Shared Library, the survey auto-continue feature will be enabled for these instruments to allow a participant to automatically continue from one to another to simulate the battery functionality.
- **New options for Data Exports**
 - When exporting a report, a new “Data formatting options” section appears in the export dialog to allow users to choose the CSV delimiter character to be used in CSV Raw Data and CSV Labels exports. Options include comma (default), tab, semi-colon, pipe, and caret. This is useful in certain cases when the resulting data file needs to have another delimiter, such as a tab, for example.
 - When exporting a report, a new “Data formatting options” section appears in the export dialog to allow users to optionally force all numbers into a specified decimal format. It will default to “Use fields’ native decimal format”, but provides the choices “Use period/full stop” and “Use comma” as the decimal character for all numbers. This will allow projects that have fields with period/full stop decimals (calc fields, number validated fields) and those with comma decimals (comma-as-decimal validated fields) to all be exported in the same uniform number format, thus providing greater consistency in the data being exported.
- **New feature:** Expand and Collapse buttons will be displayed for each instrument listed on the Codebook page in a project.
- **10 new Smart Variables**
 - **[project-id]** – The Project ID (i.e., PID) of the current REDCap project.
 - **[user-fullname]** – The current user’s first and last name
 - **[user-email]** – The current user’s primary email address
 - **[redcap-base-url]** – The base web address for the REDCap installation
 - **[redcap-version]** – The current REDCap installation’s version number
 - **[redcap-version-url]** – The base web address with the version included
 - **[survey-base-url]** – The base web address for surveys
 - **[instrument-name]** – The unique instrument name of the current survey / form
 - **[instrument-label]** – The instrument label of the current survey / form

- **[survey-title]** – The survey title of the instrument specified by a parameter (if provided), or of the current instrument (if no parameters are provided)
- **New Action Tags:**
 - **@HIDDEN_PDF** – Hides field from PDF downloads (of all PDF download types)
 - **@NOW_SERVER** – Loads the server's date / time into a text field
 - **@TODAY_SERVER** – Loads the server's date into a text field
 - **@NOW_UTC** – Loads the current UTC/GMT date / time into a text field
 - **@TODAY_UTC** – Loads the current UTC / GMT date into a text field
 - **@NOMISSING** – Disables missing data codes for a field
- **Improvement:** Line breaks may be preserved in data values in CSV data exports - When creating/editing a report, the section "Additional report options" contains a new setting: "Remove line breaks/carriage returns in all text data values (only applicable for CSV Raw and CSV Label data exports)".
- **Improvement:** New content was added to the "Help & FAQ" page
- **Improvement:** New records can now be created directly from the Record Status Dashboard. If record auto-numbering is enabled, it will display an "Add new record" button, otherwise it will display a text field for users to enter a new record name to create.
- **Improvement:** Links to the Online Designer, Data Dictionary Upload page, and Codebook were added to the left-hand project menu for easier navigation. Also, a new section "Project Home and Design" was added on the left-hand menu to contain all these links, as well as the Project Home and Project Setup page links.
- **Change:** The Data History Widget on data entry pages now displays the "seconds" component of the "Date/Time of Change" timestamp for when the data value was added/modified. This allows users to view the logging items with greater granularity for when data changes are made in narrow windows of time.
- **Improvement:** When copying a project, there are now separate options for copying users and/or user roles.
- **Improvement:** New options added to Secondary Unique Field functionality - In the "Additional Customizations" popup on the Project Setup page, users may now choose to optionally display the Secondary Unique Field's value in conjunction to displaying a record name on various project pages (in previous versions it was always displayed regardless). If left unchecked, the uniqueness of the value will still be checked during data entry or import, but the Secondary Unique Field's value will not be displayed next to the record name anywhere (e.g., in record lists, record status dashboards, reports). A second option has also been added that dictates whether or not the field label of the Secondary Unique Field will be displayed next to the value (if the value is set to be displayed next to a record name).
- **Change:** Dashes/hyphens can now be used as the raw coded value for multiple choice fields.
- **Change/improvement:** When composing a survey invitation on the Participants List page or via Survey Options on a data entry form, the "From"/sender drop-down list now displays all the email addresses (primary, secondary, and tertiary) of all users in the project.
- **Improvement:** A new search utility was added to the top of the "Help & FAQ" page to make finding keywords easier on the page. It allows for multiple word matches and also "exact phrase" matching. When performing the search, all matching questions/answers will be displayed on the page with the keywords being highlighted while non-matching questions/answers will be hidden on the page.

- **Improvement:** A new "Filter by event" option was added to the Logging page: "Record deleted (only)". This allows users to display only the logged events in which a record was deleted in the project.
- **Change:** Data Quality rules A and B have always ignored checkbox fields. But since a checkbox field can be set as "required", in which it produces an error message if no checkbox option is checked, then DQ rule A and B appear to be inconsistent with regard to whether a checkbox field can truly be empty/blank. To make these consistent when interpreting the missingness of checkbox fields, DQ rules A and B will no longer ignore checkboxes but will return discrepancies for a checkbox if it has no options checked.
- **Improvement:** When copying a project, a new checkbox has been added to the Copy Project page to copy "all report folders". In the previous version, it would always copy all reports and report folders if the "all reports" option was checked, but now it allows reports to be copied without copying report folders, if need be.
- **Improvement:** The "Sponsor Dashboard" and the Control Center's "Browse Users" page now have a new action button: "Re-send account creation email"
- **Improvement:** Under the "PDF Customization Options" section in the Additional Customizations popup on the Project Setup page, a new option has been added: "Display or hide the Secondary Unique Field value (if enabled) at the top right corner of the PDF". This option will be useful, for example, when sending the PDF to a survey participant, in which the Secondary Unique Field value should not be known or viewable to the participant.
- **Improvement:** The Record Status Dashboard will now remember the user's last selection for the "page number" drop-down and the "records per page" drop-down, so that when they return to the dashboard in that project in the future, it will already have their last selections pre-selected for those two drop-downs.
- **Improvement:** A "Copy existing choices" link was added to the "Add Matrix of Fields" popup on the Online Designer page (just like the same link in the "Add New Field" popup on that same page) to copy the choices from an existing multiple choices field to that matrix of fields.
- **Improvement:** Added support for Traditional Chinese in exported PDFs
- **Change:** When exporting data in CSV format (raw data or labels) on the "My Reports & Exports" page, it now maintains all double quotes in free-form text, whereas previous versions would replace all double quotes with single quotes in a CSV export. Note: When exporting to stats packages, it will still replace double quotes with single quotes for compatibility purposes.